Comments on:
Recommended Service Delivery Model

The State of Arizona is facing the same challenges as many state, county and city governments. In the late 1980's, regulatory trends and technology factors created an environment favoring deployment of large private networks and switching infrastructure. At the time, deregulation on regulated services led to increasing prices for local services and declining prices for usage and long distance services. From a technology perspective, PBXs provided a wider range of features and station equipment options when compared against central office based services (centrex) while delivering a comparable level of reliability. The expected PBX product life cycle increased as systems incorporated integrated circuit technology and software became mature. Aggregation of local services (lines, trunks, centrex) provided the only mechanism for reducing costs. Price reductions in long distance required customers to aggregate larger volumes of traffic to gain price discounts. As a result, many organizations built and managed large private networks to reduce costs and improve service.

Now the State of Arizona faces significant challenges. Because of its physical age, the existing MLS-100 will become more expensive to maintain. The advent of IP telephony will require a significant investment in data infrastructure, VoIP equipment and support if the State wishes to incorporate VoIP technology into its network.

Verizon has reviewed the report to the Joint Legislative Budget Committee for Arizona Telecommunications Services and agrees with the conclusion that privatization provides the State of Arizona with the most cost effective model for telecommunication service provisioning on a going forward basis.

In Section X.D of the report, the State of Arizona notes there a various options for private sector participation. The key distinction between the options is the degree to which the State retains ownership of the assets. Given the age of the existing assets, Verizon recommends the State of Arizona proceed with private ownership of the telecommunications assets. By allowing private ownership of the assets, the State provides an incentive for vendor partners to update technology to protect the vendor's investment. Further, private ownership of the assets will enable the State to grow without requiring investment by the State. In return, the State of Arizona should expect a standard, predictable price over the life of the contract.

Under the private ownership option, the State of Arizona should incorporate the following operational elements as part of the service requirements:

- Fixed monthly price over the term of the contract.

- Maintenance for digital, IP and/or analog telephones over the term of the contract.

- Remote software Moves, Adds and Changes within specified timeframes as part of monthly price.

- Specified Technician-facilitated Moves, Adds and Changes activity within specified time frames as part of monthly price.

- Full maintenance on system components and peripheral equipment.

- System monitoring, 24x7 with remote dispatch of technicians.

- PBX maintenance software upgrades over the term of the contract.

- Software technology refresh over the term of the contract.

- Stations or trunk additions within minimum/maximum limits without additional charge.

The ADOA, in the report to JLBC, identifies several benefits of privatization in Section X.D. Privatization eliminates the need for the State of Arizona to invest in hard assets (telecommunications equipment) or soft assets (training for telecommunications staff). Verizon's proposed service requirements also provide the State of Arizona with a stable price over the life of the contract even if growth occurs. The State of Arizona is protected from obsolescence because the vendor/owner of the assets will maintain and upgrade technology as required to support the State's requirements. Finally, the State will have one point of accountability for management of its telecommunications infrastructure.

Comments on:
Migration Strategy

Migration from a legacy network to a new fault tolerant, cost effective converged network starts with careful planning and design. Enterprise network managers are challenged with building highly available, reliable, accessible and secure networks while being confronted with conflicting visions of what the future holds from hardware vendors. Verizon recommends a phased approach providing an architecture and technology roadmap to guide the State of Arizona from legacy to next generation networks in support of its business objectives. A network architecture recommendation report will be provided accompanied by a transition plan to serve as a guide through the migration after gathering pertinent information regarding the network environment, bandwidth requirements, applications, business requirements, and architectural goals. The architecture recommendation will include recommendations for the optimum transport technology best suited to serve the State's various applications. The network architecture recommendation will provide specifications for equipment selection, and a network design will be developed. An executive briefing describing the process, results, architectural recommendation and design, and transition plan will be presented to the State of Arizona Telecommunications Governance Committee for approval.

To accomplish migration with minimal impact on operations, the implementation plan will define work to be performed in individual phases. The existing legacy network has to be integrated with the new network to allow for a phased migration of services. Prioritization schedule of the sites, agencies or departments to be migrated needs to be developed. State of Arizona personnel will identify priorities to be used in establishing conversion schedules.

The first step in the implementation phase is to select a main site and introduce access to the new transport technology. For example, if Metro Ethernet is selected as the transport technology of choice, and the Capitol Mall in Phoenix is selected as the main site, a connection to the Metro Ethernet Network will be provided at The Capitol Mall. This will serve as link between the legacy FDDI/Frame-Relay/ATM network and the new Metro Ethernet Network. Once this connection is provided, the other State Agency remote sites may be migrated to the Metro Ethernet Network based on the schedule priority.

Each State Agency remote site will be evaluated independently and scheduled according to the State's priority for that site. Based on the requirements of each site or Agency, different implementation activities would be scheduled. For example, if a site

has a Key System that has reached the end of its useful life, the agency involved may consider also migrating to VOIP. If that is the case, additional implementation activities such as upgrading the wiring infrastructure, equipping the IDFs with uninterruptible power supplies (UPS), upgrading the LAN infrastructure to accommodate quality of service (QOS), installing Ethernet switches with Inline Power for IP phones, and performing a network audit/analysis to see if the current LAN infrastructure is capable of supporting VOIP applications may be required. For VoIP applications, the network audit is absolutely required for successful implementation. Some agencies may require higher levels of security on the network. For these agencies, implementation of special security schemes may have to be performed.

In general, the following steps serve as a guideline of tasks that need to be done for each site that is being migrated:

- Upgrade the wiring at the sites (if needed).
- Provide access to the new transport technology and check for connectivity to the main site via the new WAN connection. After verification of connectivity, disconnect the site from the legacy network and allow traffic to flow through the new transport connection.
- For voice applications, the new WAN transport may be used also to transport IP voice (used as trunk) between traditional PBXs. When the site is ready for VOIP to the desktop, the LAN infrastructure may require upgrade and configuration changes to accommodate for QOS. Voice traffic simulations will be performed on the network. MOS (Mean Opinion Score) will be measured to determine whether network adjustments need to be made to accommodate voice and video traffic, and if necessary, make adjustments to bring the network performance (MOS Score) to an acceptable level before migrating the site to VOIP.
- As each site is migrated, test measurements will be performed to gage the performance of the new network. This may also be used as a baseline for future reference. Tools such as Concord NetHealth may be used to take these measurements.
- An acceptance plan will be developed and applied to each of the sites migrated to the new transport technology. Acceptance criteria will be agreed upon by Verizon and the State of Arizona.

Comments on:
Cost Savings Measures

The ADOA and GITA report identify a number of areas for potential savings. Of these, privatization of the telecommunications infrastructure provides the best mechanism to stabilize and reduce investment and expenses over the planning horizon discussed in the reports. Privatization of the telecommunications assets eliminates costs such as training and also reduces investment in equipment and software upgrades, inventory, and test equipment/tools.

Convergence of voice and data traffic offers the potential for reducing usage costs. The State should be able to negotiate the lowest possible rates for long distance service by aggregating long distance traffic for dedicated hand-off to a carrier. The State could further reduce usage charges by eliminating costs for inter site communications between State facilities.

VoIP technology makes convergence of voice and data possible through IP trunking, the most cost effective application for VoIP technology. VoIP trunking is only cost effective, however, if the existing WAN links between sites have excess capacity to support long distance and inter-site volume of calls while maintaining acceptable voice quality.